Studio L Series

L8400P

Amplifier/Subwoofer

SERVICE MANUAL

JBL Consumer Products
250 Crossways Park Dr.
Woodbury, New York 11797

Rev1 3/2006

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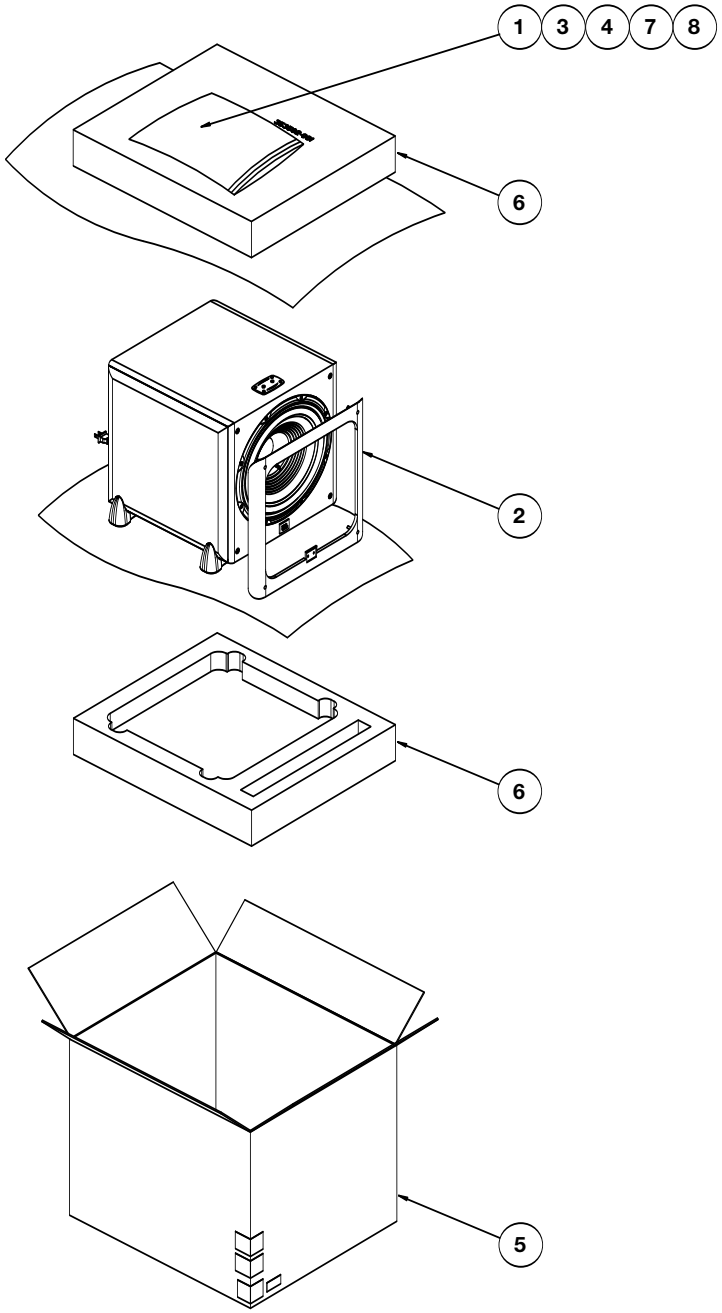
L8400P BASIC SPECIFICATIONS

Amplifier Power (RMS)	600 Watts
Peak Dynamic Power *	1200 Watts
Frequency Response (–3dB)	22Hz – Low-pass crossover frequency
Low-Pass Crossover Frequencies	50Hz – 150Hz, Continuously adjustable
Low-Frequency Transducer	12" (300mm) PolyPlas™ cone
Baffle	Low diffraction, IsoPower™
Enclosure	Sealed
Inputs	Gold-plated 5-way binding-post speaker-level;
	Left and right line-level, switchable to LFE
Outputs	150Hz when using speaker-level connection
	Gold-plated 5-way binding-posts
Dimensions (H x W x D)	16-1/2" (15-1/2" without feet) x 15-1/2" x 15-1/2"
	(419mm [394mm without feet] x 394mm x 394mm)
Weight	58 lb (26.4kg)

***** The Peak Dynamic Power is measured by recording the highest peak-to-center voltage produced by the power amplifier with its limiters disabled, across the output of a resistive load equal to minimum impedance of the transducer, using a 50Hz sine waveburst, 3 cycles on, 17 cycles off.

Occasional refinements may be made to existing products without notice but will always meet or exceed original specifications unless otherwise stated

L8400P
Packaging

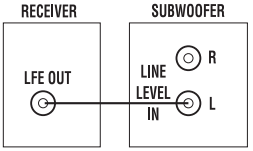


ITEM NO.	DESCRIPTION	QTY.	PART NO.
1.	Owner's Manual	1	354038-001
2.	Front Grille	1	353234-001
3.	Warranty Card, JBL 5YR/1YR	1	338381-001
4.	Kit, Spike Foot	4	354432-001
5.	L8400P Outer Carton, Black	1	353588-001
	L8400P Outer Carton, Beech	1	353588-002
	L8400P Outer Carton, Cherry	1	353588-003
6.	Pad, Foam, Top, Bottom L8400P	2	353592-001
7.	Y-Adapter Cable	1	354058-001
8.	Foot, Bump-On 3M, SJ5744	4	330104-001

L8400P Powered Sub/ Plate Amp					
LINE VOLTAGE	**Yes/No**	**Hi/Lo Line**	**Nom.**	**Unit**	**Notes**
US 120VAC/60Hz	Yes	108-132	120	Vrms	Normal Operation
EU 230VAC/50-60Hz	Yes	207-264	230	Vrms	Normal operation, MOMS required
Parameter	**Spec.**	**Unit**	**QA Test Limits**	**Conditions**	**Notes**
Amp Section					
Type (Class AB, D, other)	D	n/a	n/a		Bridge type amplifier, None of the speaker terminals must be connected to system GND at any time.
Load Impedance (speaker)	4	Ohms	n/a	Nominal	
Rated Output Power	450	Watts	380	1 input driven	Measuring 425 Watts Cold
THD @ Rated Power	0.5	%	1	22K filter	
THD @ 1 Watt	0.1	%	0.2	22K filter	
Dynamic Power	460	Watts	450	Power is the average measurement of the first four consecutive peaks of the burst signal	3/20 Cycles @ 50 Hz, burst test into 4 Ohms, input driven 6dB above its maximum sensitivity, volume level at Maximum.
DC Offset	80	mV-DC	100	@ Speaker Outputs	
Damping factor	>20	DF	15	Measured at amplifier board	Measured at the speaker cable. 200 Watts, measured at speaker output terminals located at the amp board.
Input Sensitivity					
Input Frequency	50	Hz	30	Nominal Freq.	
Left or Right inputs	16.6	mVrms	±2dB	To 1 Watt	Single input driven, Ap Zo=600 Ohms, LP ON, Volume ctrl & crossover at max
Left & Right with LFE or LP filter OFF Mode selected	16.6	mVrms	±2dB	To 1 Watt	Single input driven , Ap Zo=600 Ohms, LP OFF, Volume ctrl & crossover at max
Speaker/Hi Level Input	165	mVrms	±2dB	To 1 Watt	Single input driven, Ap Zo=25 Ohms, Normal, Volume ctrl & crossover at max
Signal to Noise					
SNR-A-Weighted	100	dBA	90	Relative to rated power (400 Watts)	A-Weighting filter
SNR-unweighted	95	dBr	85	Relative to rated power (400 Watts)	22K filter
SNR rel. 1W-unweighted	70	dBr	65	Relative to 1W Output	22K filter
Residual Noise Floor	0.5	mVrms	1	Volume @max, using RMS reading DMM/VOM (or A/P)	
Residual Noise Floor	0.5	mVrms(max)	1	Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics)	
Speaker input rejection				1.0V + RMS applied to + & - inputs	
CMRR Speaker in	>37	dB	Reference	50 Hz, Generator GND to system GND	
Input Impedance					
Line Input (L, R,LFE)	10K	ohms	n/a	Nominal	
Speaker/Hi Level Input	10K	ohms	n/a	Nominal	
Filters					
LP 4th order variable	50-150	Hz	± 10		
Subsonic filter (HPF) 3rd Orde	Fixed	Hz	± 10		
Low pass filter OFF	Fixed	Hz	± 20	L or R input driven, LP Filter OFF	
HP Speaker output 4 Ohms	200	Hz	± 10	Speaker output loaded with 4 Ohms	
HP Speaker output 8 Ohms	100	Hz	± 10	Speaker output loaded with 8 Ohms	
Limiter					
THD at Max. Output Power	YES	n/a	functional		
Features	--				
Auto - On -Off	YES	--	functional		No switch to select the ATO mode is provided, Refer to ATO section

Parameter	Spec.	Unit	QA Test Limits	Conditions	Notes
Amp Section					
Phase switch	0-180	deg	functional		
Volume pot Taper (lin/log)	LOG	--	functional		5K A Taper
Variable crossover 50-150 Hz	YES		functional		4th Order LP Filter, 2nd order fix and 2nd order variable.
HP Speaker out	YES		functional		Pass through from the speaker input section
LP On- Off Select switch	YES	--	functional		Disables LP filter, intended for LFE
On-Off indicators	YES		functional		Unit is provided with 2 LED's BLU-ON, RED-OFF
Input Configuration					
Line In (L,R) & LFE	YES	--	functional		Dual RCA jack, L or R is used in LFE mode
Spkr/Hi Level In	YES	--	functional		Binding post connector L&R
Signal Sensing (ATO)					
Auto-Turn-On (yes/no)	YES		functional	Auto - on selection switch in Auto	
ATO Input test frequency	50	Hz	functional	"	
Min ATO Level L or R Inputs	3	mV	functional	"	Single input driven
Min ATO Level Speaker in L or R inputs	30	mV	functional	"	Single input driven
ATO Turn-on time	2	seconds	functional	Amp connected and AC on, then input signal applied	
Auto Mute/ Turn-OFF Time	5	minutes	17	(T) Time before muting, after minimum ATO signal is removed (3mV)	Auto turn of time (T) must be 5 > T < 17 Minutes
Auto Mute/ Turn-OFF Time	15	Minutes	17	(T) Time before muting, after input signal is removed	Auto turn of time (T) must be 10 > T < 17 Minutes
Power on Delay time	2	sec.	4	AC Power Applied	
Transients/Pops					
ATO Transient	5	mV-peak	n/a	@ Speaker Outputs	
Turn-on Transient	50	mV-peak	1V-pk-pk	@ Speaker Outputs	AC Line cycled from OFF to ON
Turn-off Transient	50	mV-peak	1V-pk-pk	@ Speaker Outputs	AC Line cycled from ON to OFF
Efficiency					
Efficiency	68	%	65	400W of output power	Nominal Line voltage 120 VAC
Stand-by Input Power	18	Watts	20	@ nominal line voltage, Amp in OFF state, RED LED activated	Maximum allowable input power LED in RED, Class D inactive
Stand-by Input Power	22	Watts	25	@ nom. line voltage, Amp in On state, Green LED activated	Maximum allowable input power under nominal Input voltage and frequency, in stand-by mode (HOT or COLD operation, LED GREEN). Class D active but no signal applied.
Power Cons. @ 400W	584	Watts	615	@ nom. line voltage	400 Watts into 4 Ohms nominal line voltage
Protection					
Thermal Protection	YES		functional	@1/8 max unclipped Power	Temperature rise in accessible metal parts should not exceed 35K rise for domestic version or 30K rise for European versions (refer to requirements sheet). Unit is protected for over-temperature conditions
DC Offset Protection	YES		-	DC present at Speaker Out leads	Relay opens during a DC output condition
Line Fuse Rating					
USA-Domestic	5	Amps		Type-T or Slo Blo-250 V	
EU	2.5	Amps		Type-T , Low Breaking capacity-250 V	Internal fuse with UL/SEMKO rated holder

DOLBY* DIGITAL OR DTS® (OR OTHER DIGITAL SURROUND MODE) CONNECTION



Use this installation method for Dolby Digital, DTS or other digital surround processors:

Use either the left or right line-level input jack for the Low-Frequency Effects channel; it doesn't matter which one you choose.

IMPORTANT: Make sure that the LFE/Normal toggle switch ❺ is in the "LFE" position. This will bypass the subwoofer's normal low-pass filter, reducing the possibility of signal degradation and more accurately reproducing the program materials. However, if your receiver is passing a full-range signal through its subwoofer output, place the toggle switch in the "Normal" position, which will activate the low-pass filter and protect the subwoofer from possible damage. Connect this jack to the LFE output or subwoofer output on your receiver or amplifier. Connect each speaker to the corresponding speaker terminals on your receiver or amplifier.

Make sure that you have configured your surround sound processor for "Subwoofer On." Also, remember to configure your receiver for 5.1-, 6.1- or 7.1-channel operation as appropriate.

DOLBY PRO LOGIC* (NON-DIGITAL) – LINE LEVEL

Use this installation method for Dolby Pro Logic applications (not Dolby Digital, DTS or other digital processing), where the receiver/processor is equipped with a subwoofer output, or a volume-controlled preamp (line-) level output:

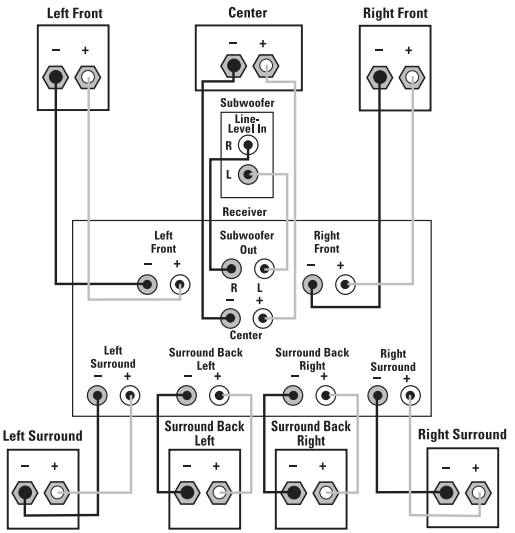
Use RCA-type interconnects to connect the line-level subwoofer outputs on your receiver or amplifier to the line-level inputs on the subwoofer. IMPORTANT: Make sure that the LFE/Normal toggle switch ❺ is in the "Normal" position. This will activate the subwoofer's low-pass filter, protecting the subwoofer from possible damage and enabling it to operate most efficiently by reproducing only the low-frequency materials that it is best at handling.

NOTE: If your receiver or amplifier only has one subwoofer output jack, then you will need to use a Y-connector (not included). Plug the male end of the Y-connector into your receiver or amplifier's subwoofer output jack, and connect each of the two female ends to separate RCA-type interconnects. Finally, plug the RCA-type interconnects into the line-level inputs on the subwoofer.

Connect each speaker to the corresponding speaker terminals on your receiver or amplifier.

Make sure your receiver or processor is correctly configured to indicate that the subwoofer is "On."

Note for advanced users: If your receiver/processor has a built-in low-pass crossover filter for the subwoofer output, you may switch the LFE/Normal toggle switch to the "LFE" position to bypass the subwoofer's internal crossover.

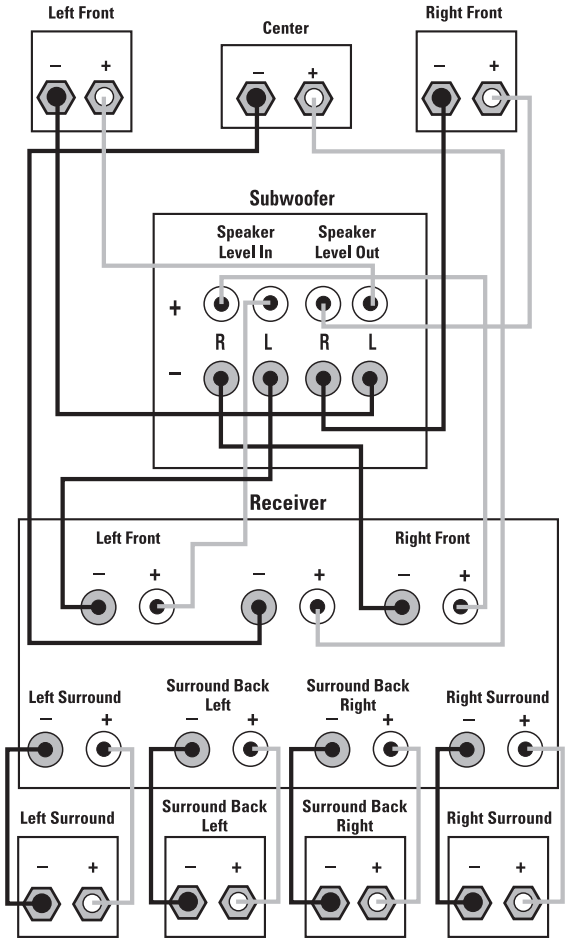


DOLBY PRO LOGIC (NON-DIGITAL) – SPEAKER LEVEL

Use this installation method for Dolby Pro Logic applications (not Dolby Digital, DTS or other digital processing), where the receiver/processor does not have a subwoofer output, or a volume-controlled preamp (line-) level output:

Connect your receiver or amplifier's front left and right speaker terminals to the left and right terminals on the subwoofer that are marked "Speaker Level In." Connect the left and right terminals on the subwoofer that are marked "Speaker Level Out" to the corresponding terminals on the back of your front left and right speakers.

Connect your receiver or amplifier's center, surround and surround back speaker terminals to the corresponding terminals on the back of your center and surround speakers.



OPERATION

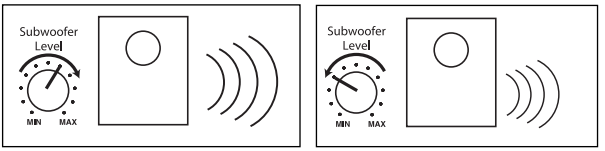
Power

Move the Master Power switch ❹ to the "On" position to use the L8400P subwoofer.

If you will be away from home for an extended period of time, or if the subwoofer will not be used, switch the Master Power switch ❹ to the "Off" position.

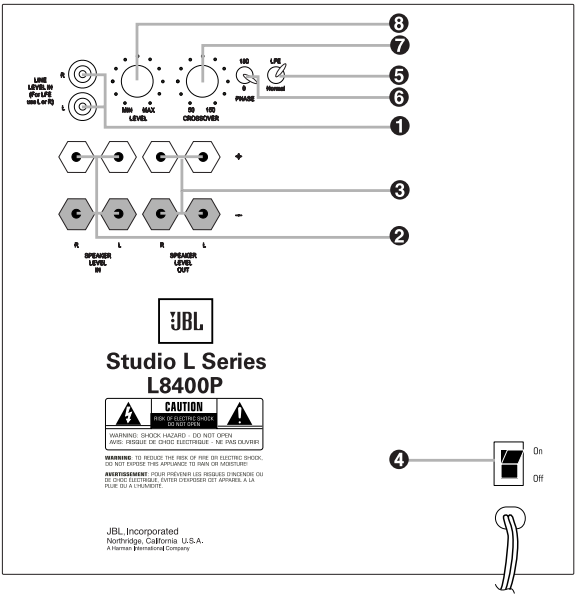
Level Control

The subwoofer Level Control ❽ adjusts the volume of the subwoofer relative to the rest of the system. Proper level adjustment depends on several variables such as room size, subwoofer placement, type of main speakers and position. Adjust the subwoofer level so that the volume of the bass information is pleasing to you.



Crossover Adjustments

The Crossover Frequency Control ❼ determines the highest frequency at which the subwoofer reproduces sounds. If your main speakers can comfortably reproduce some low-frequency sounds, set this control to a lower frequency setting, between 50Hz and 100Hz. This will concentrate the subwoofer's efforts on the ultradeep bass sounds required by today's films and music. If you are using smaller bookshelf speakers that do not extend to the lower bass frequencies, set the low-pass crossover control to a higher setting, between 120Hz and 150Hz. This control is not used when the LFE switch ❺ is in the "LFE" position.


8
7
5
6
1
3
2
4
LINE LEVEL IN (For LFE use L or R)
MIN MAX LEVEL
50 100 CROSSOVER
100 0 PHASE
LFE Normal
SPEAKER LEVEL IN
SPEAKER LEVEL OUT
Studio L Series
L8400P
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
WARNING: SHOCK HAZARD - DO NOT OPEN
AVIS: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR
WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE
AVERTISSEMENT: POUR PREVENIR LES RISQUES D'INCENDIE OU DE CHOC ELECTRIQUE, ENTRE CHERCHER CET APPAREIL A LA PLUIE OU A L'HUMIDITE.
On
Off
JBL Incorporated
Northridge, California U.S.A.
A Harman International Company

Phase Control

The Phase Control ❻ determines whether the subwoofer's pistonlike action moves in and out in phase with the main speakers or opposite the main speakers. There is no correct or incorrect setting. Proper phase adjustment depends on several variables such as subwoofer placement and listener position. Adjust the Phase switch to maximize bass output at the listening position.

Remember, every system, room and listener is different. There are no right or wrong settings; this switch offers the added flexibility to adjust your subwoofer for optimum performance for your specific listening conditions without having to move your speakers. If at some time in the future you happen to rearrange your listening room and move your speakers, you should experiment with the Phase switch in both positions, and leave it in the position that maximizes bass performance.

TROUBLESHOOTING

If you used the high-level (speaker) inputs and there is no sound from any of the speakers:

• Check that the receiver/amplifier is on and a source is playing.

• Check that the powered subwoofer is plugged into an active electrical outlet and is switched on.

• Check all wires and connections between the receiver/amplifier and the speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut or punctured, or touching each other.

• Review proper operation of your receiver/amplifier.

If there is low (or no) bass output:

• Make sure the connections to the left and right "Speaker Inputs" have the correct polarity (+ and –).

• Make sure that the subwoofer is plugged into an active electrical outlet and switched on.

• Adjust the crossover point.

• Flip the Phase Control switch to the opposite position.

• If you are using a Dolby Digital/DTS receiver or processor, make sure that the subwoofer and bass management adjustments on the receiver/processor are set up correctly.

• Slowly turn the Level Control clockwise until you begin to hear the desired amount of bass.

If you used the line-level inputs and there is no sound from the subwoofer:

• Check that the receiver/amplifier is on and a source is playing.

• Check that the powered subwoofer is plugged into an active electrical outlet and is switched on.

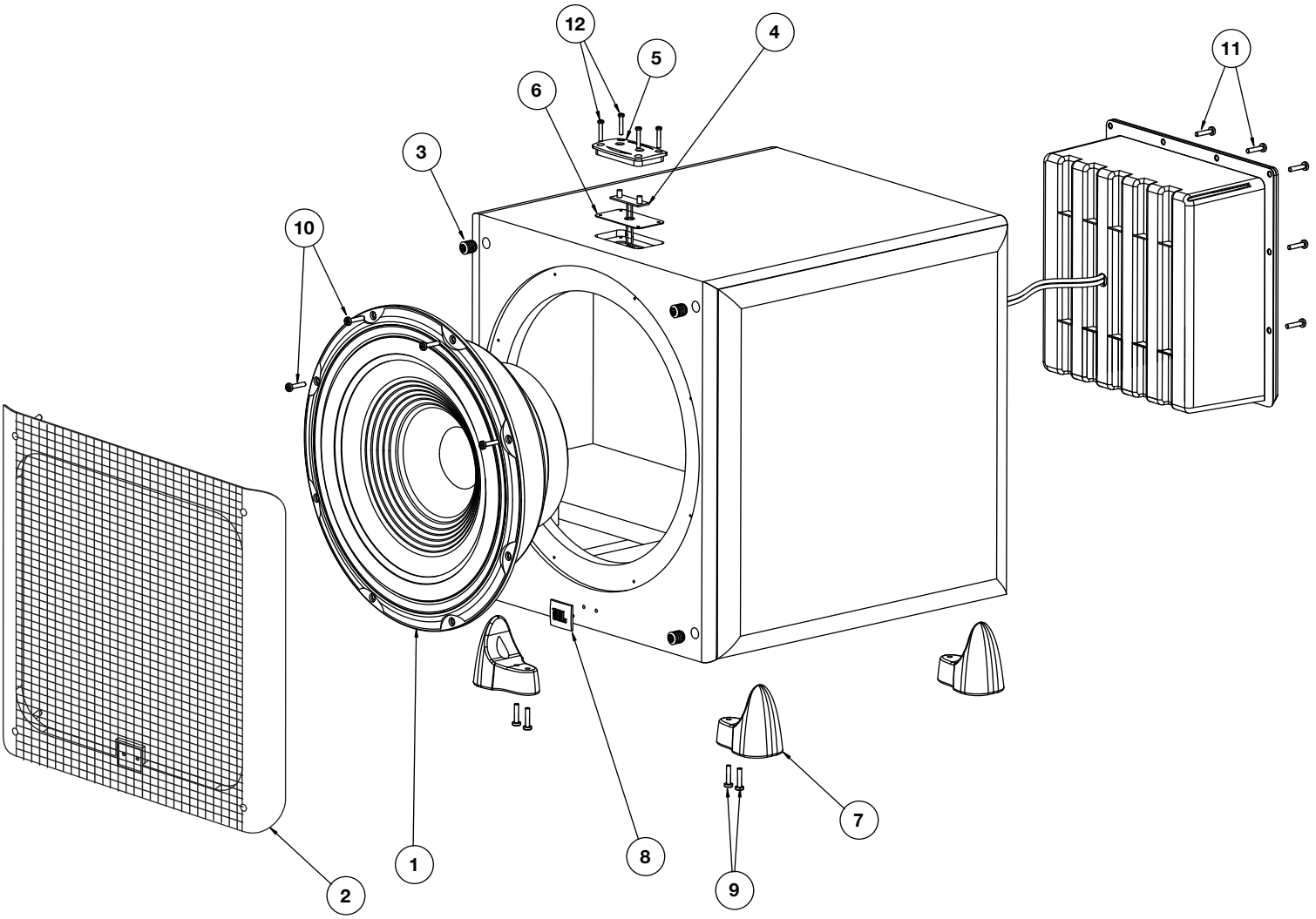
• Check all wires and connections between the receiver/amplifier and the subwoofer. Make sure all wires are connected. Make sure none of the wires are frayed, cut or punctured, or touching each other.

• Review proper operation of your receiver/amplifier.

• Slowly turn the Level Control clockwise until you begin to hear the desired amount of bass.

• Make sure that you have configured your receiver/processor so that the subwoofer/LFE output is on.

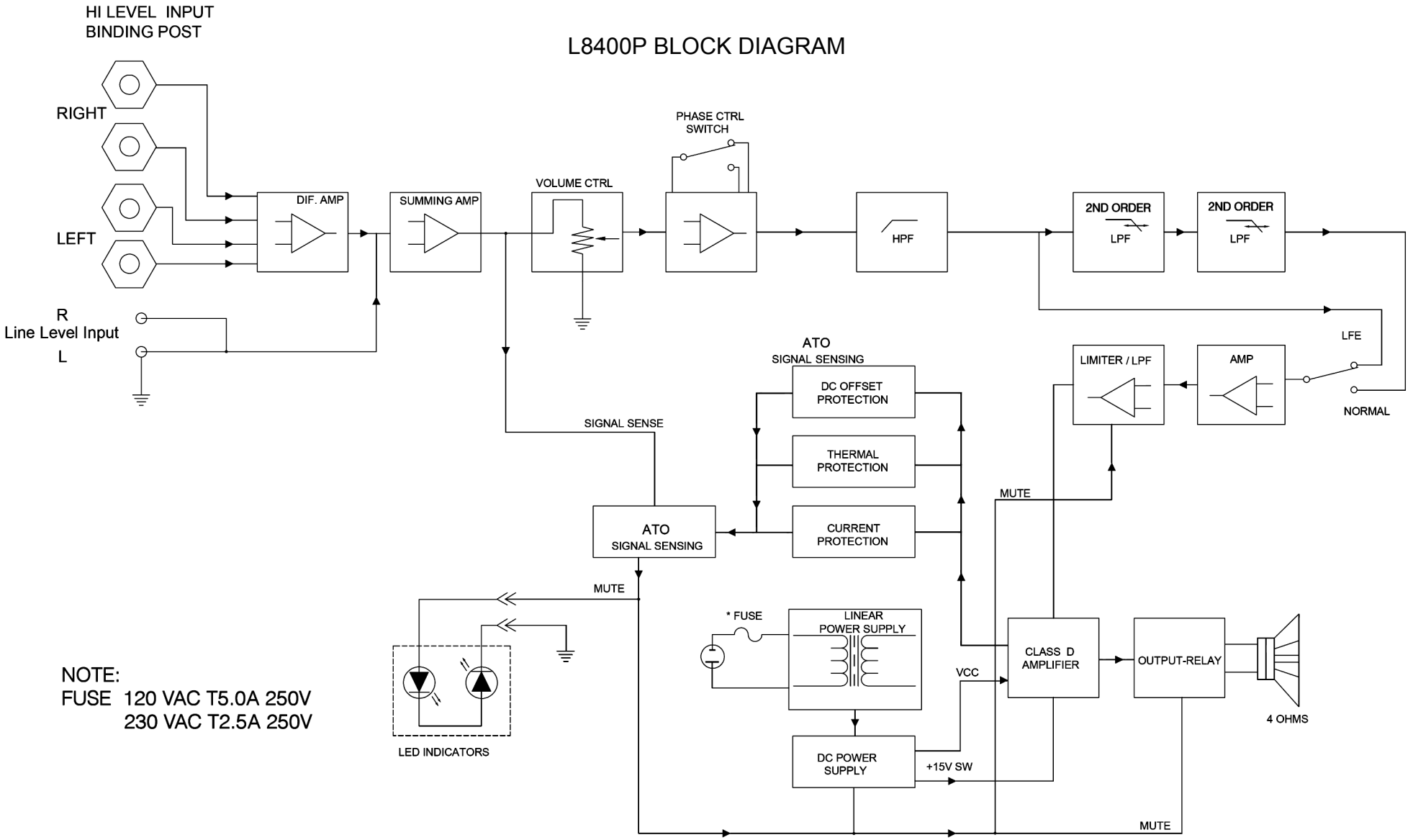
L8400P
Exploded View

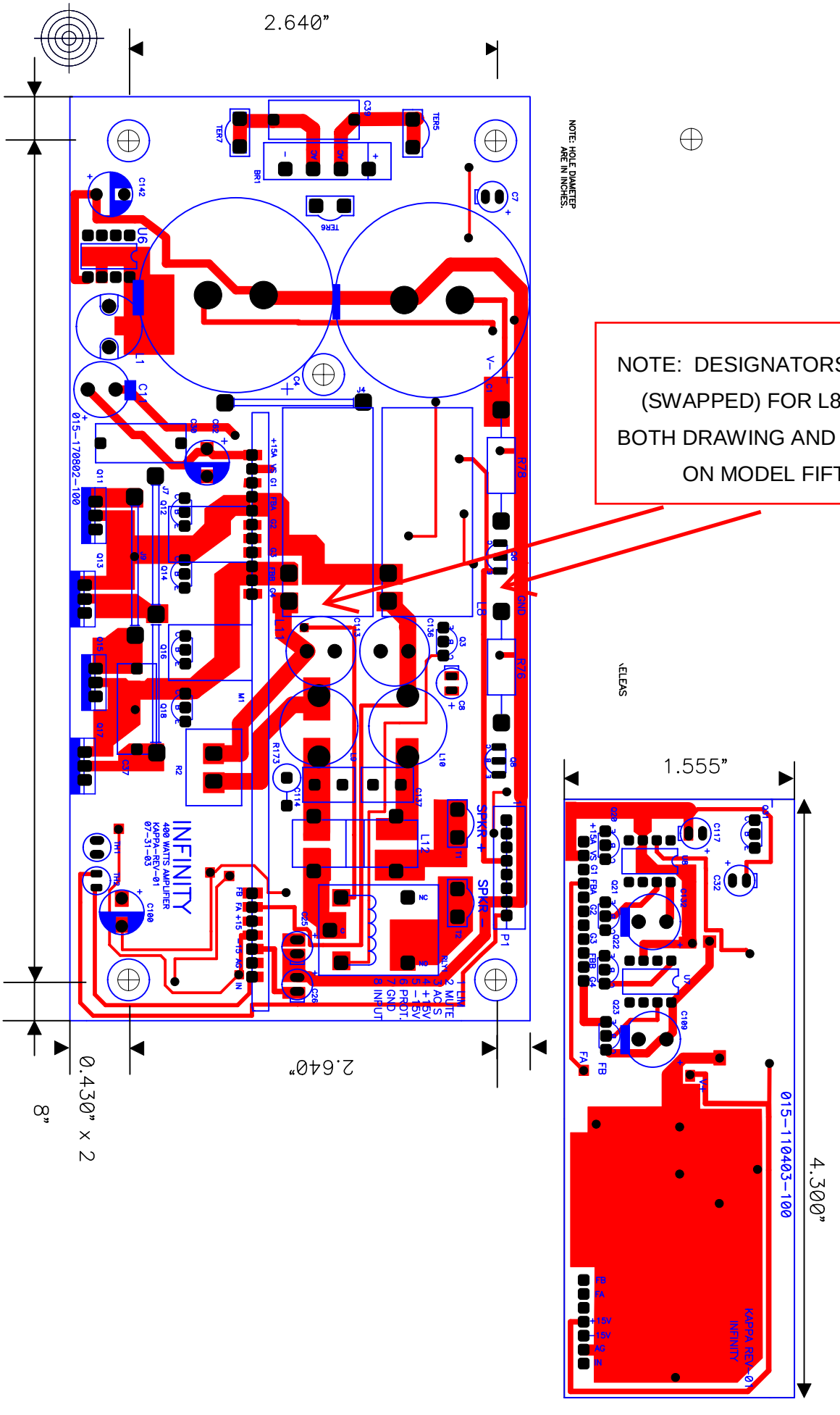


ITEM NO.	DESCRIPTION	QTY.	PART NO.
1.	Woofer Assembly 12" DCR=3.7Ω ±10%	1	353112-001
2.	Front Grille	1	353234-001
3.	Grille Cup, BLK	4	333249-001
	Grille Cup, BE & CH	4	333249-003
4.	LED Wire Assembly	1	354288-001
5.	Plate LED	1	353356-001
6.	Gasket, Plate LED	1	353589-001

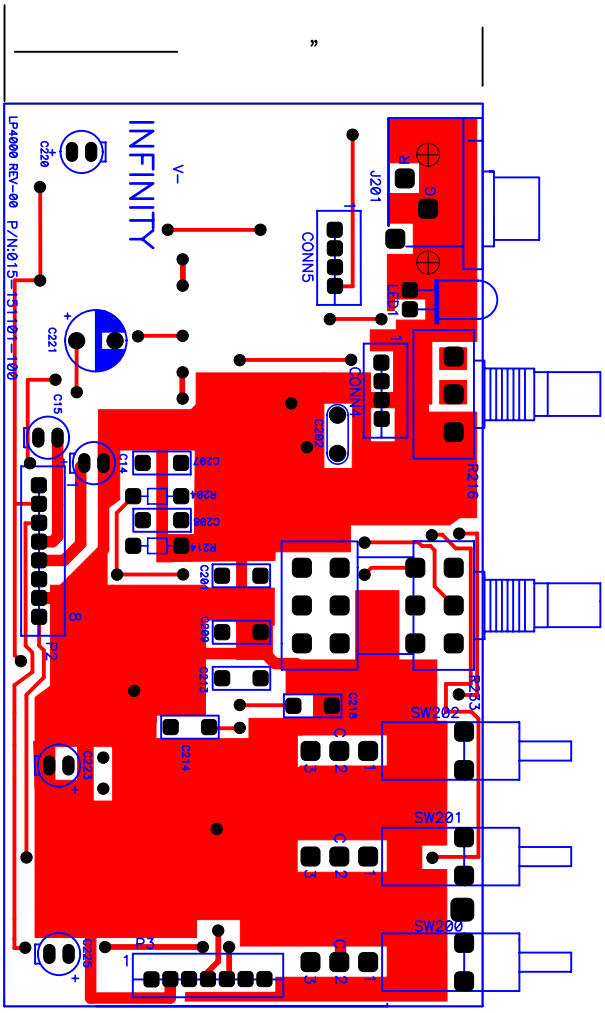
ITEM NO.	DESCRIPTION	QTY.	PART NO.
7.	Assembly, Foot	4	353354-001
8.	Assembly, Logo	1	353284-001
9.	Screw (Foot) #8 X 1, PB, TRPH CR BLK	8	903101-016
10.	Screw (Woofer) #8 X 3/4," PB, HXS, ZINC	8	903802-012
11.	Screw (Amplifier) #8 X 1, PPH, PB, BLK	12	900101-016
12.	Screw (LED Plate) #6 X 3/4," PB, HXS, ZINC	4	908302-012

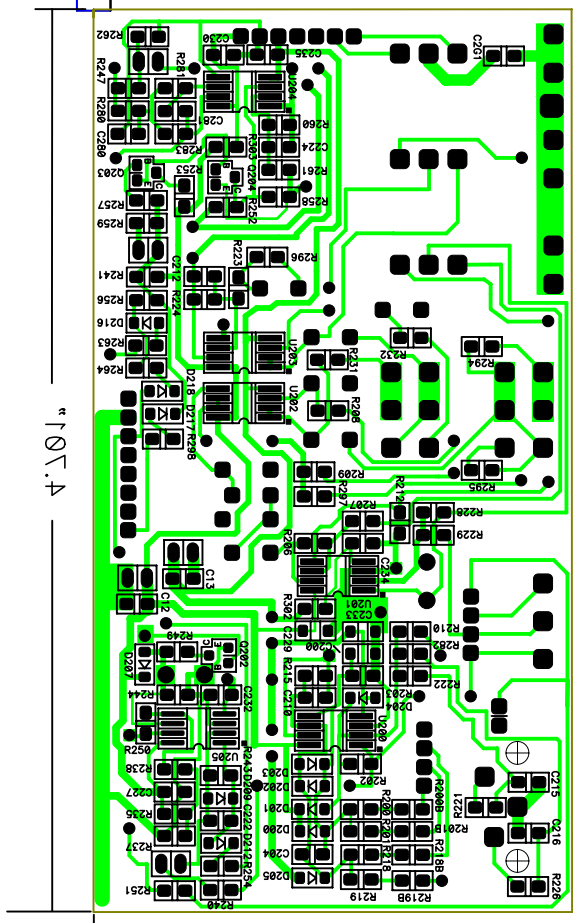
L8400P BLOCK DIAGRAM

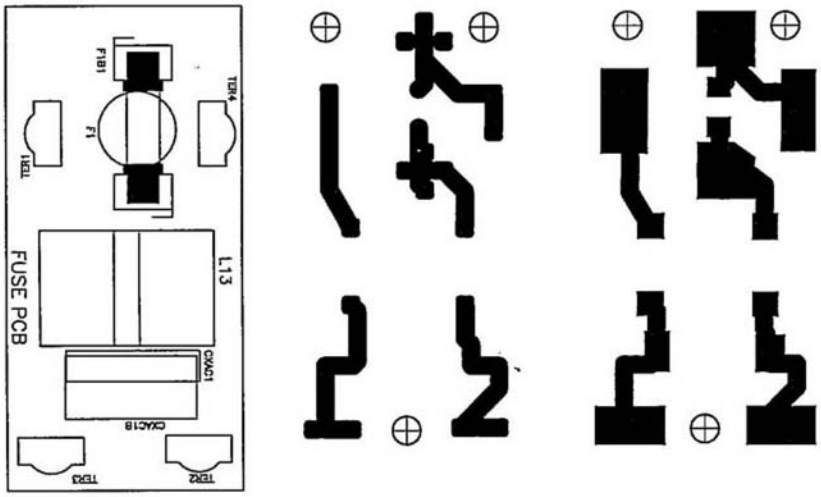


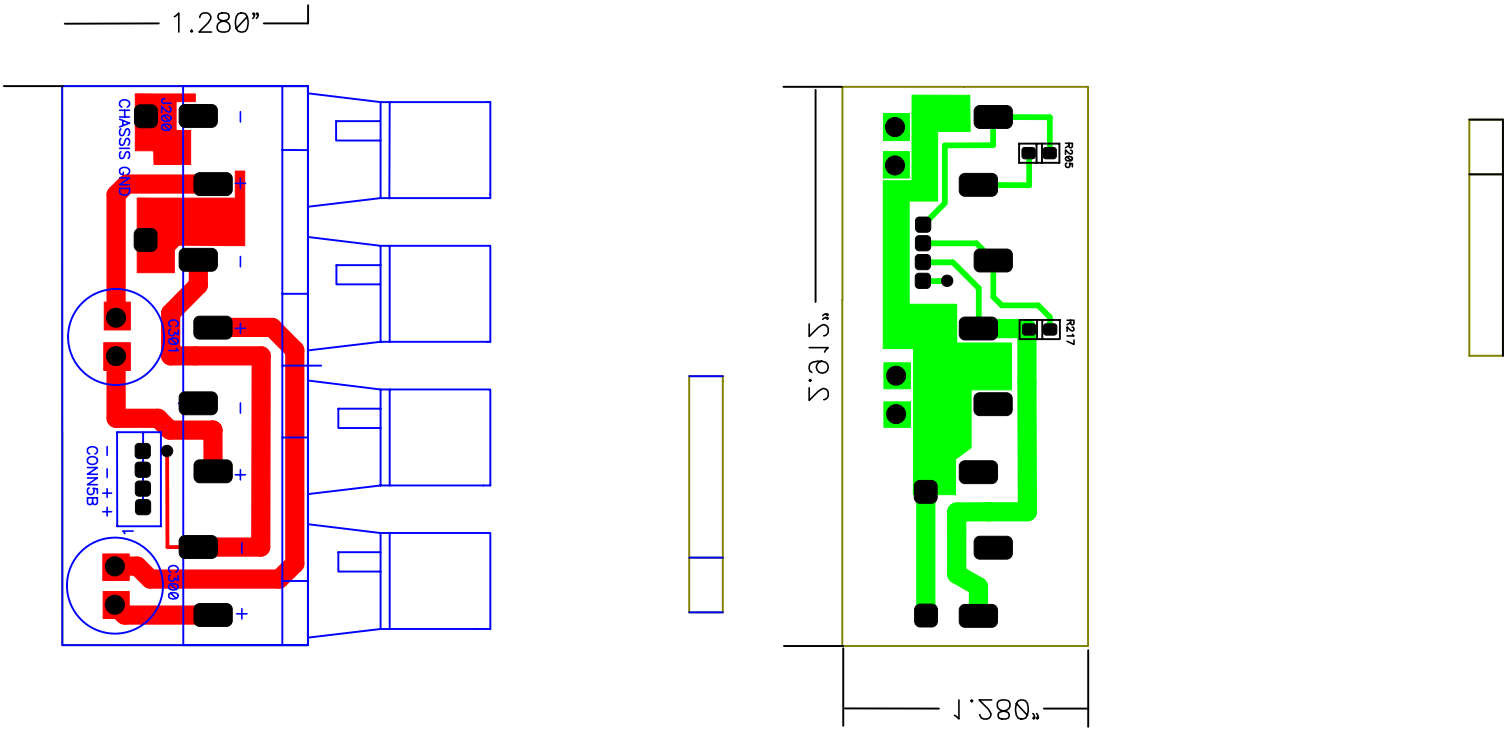

2.640”
NOTE: HOLE DIAMETER ARE IN INCHES.
NOTE: DESIGNATORS ARE WRONG (SWAPPED) FOR L8 AND L11. BOTH DRAWING AND ACTUAL PCB ON MODEL FIFTEEN
1.555”
4.300”
0.430” x 2
8”
2.640”
INFINITY
400 WATTS AMPLIFER
KAPPA-REV-01
07-31-03
015-170802-100
015-110403-100
SPKR +
SPKR -

4.200"
5.222"
2.649"
5 x 0.230"
.8"
5.840"


INFINITY
V-
J201
CONN5
CONN4
SW202
SW201
SW200
LP4000 REV-00 P/N0151-151101-100




FUSE PCB
L13
F1B1
F1
TB1
TB4
TB3
TB2
CXAC1
CXAC19


1.280"
J200
CHASSIS GND
CN01
CN00
CONN5B
R205
R217
2.912"
1.085"

L8400P (120v) ELECTRICAL PARTS LIST			
Part Number	Description	Reference Designator	Qty
Main Amp/Supply PCB			
Resistors			
024-000098-120	GS SMD resistor 0R 1/8W J 0805 (R8)	R8	1
024-100498-120	SMD resistor 1K 1/8W J 0805 (R110)	R110	1
024-100598-120	GS SMD resistor 10K 1/8W J 0805 ()	R5,7,16,118,121,122,125,1,126,128,138,165,170,168,139	15
024-100698-120	GS SMD resistor 100K 1/8W J 0805 (R15,120)	R15,120	2
024-110598-120	SMD resistor 11K 1/8W J 0805	R187,188,190,191	4
024-130498-100	SMD resistor1K3 1/8W F 0805	R189,192	2
024-150598-120	SMD resistor 15K 1/8W J 0805 (R20,21)	R20,21	2
024-160598-100	SMD resistor 16K 1/8W F 0805 (R13,13B)	R13,13B	2
024-220298-120	SMD resistor 22R 1/8W J 0805 (R28,29)	R28,29	2
024-220498-120	SMD resistor 2K2 1/4W J 1206 (R119)	R119	1
024-220498-121	SMD resistor 2K2 1/8W J 0805 (R17,31)	R17,31	2
024-220598-120	SMD resistor 22K 1/8W J 0805 (R127)	R127	1
024-330498-120	SMD resistor 3K3 1/8W J 0805 (R77,79,22,)	R77,79,22	3
024-330598-120	SMD resistor 33K 1/8W J 0805 (R4,6,14,60,60B)	R4,6,14,60,60B	5
024-412498-100	SMD resistor 4K12 1/8W F 0805 (R63)	R63	1
024-470298-120	GS SMD 47R 1/8W J 0805 (R24-27)	R24-27	4
024-470398-120	GS SMD resistor 470R 1/8W J 0805	R145,155,177,186	4
024-470598-120	GS SMD resistor 47K 1/8W J 0805 (R3,171)	R3,171	2
024-510498-120	SMD resistor 5K1 1/8W J 0805	R48A,48B,48C,48D,48E	5
024-560498-120	GS SMD resistor 5K6 1/8W J 0805	R30,169	2
024-680498-120	GS SMD resistor 6K8 1/8W J 0805 (R23)	R23	1
021-100401-020	MOF Resistor 1K 1W J FK TYPE	R173	1
021-560305-020	MOF resistor 560R 5WS J 8x25 KINK	R76	1
022-005105-020	GS Resistor PN:SQM 0R05 5W J 25x13	R2	1
022-470307-020	Resistor KNP 470R 7W J (KNP-700S)	R78	1
Capacitors			
034-100614-300	Electrolytic cap. 100uF/16V M (R)0611 P:2.5	C8	1
034-100625-300	Eletrolytic cap. 100uF/25V M (R)6.3x11 P:5	C62	1
034-100695-300	electrolytic 100uF/63V M (R)1012 P:5 ()	C142	1
034-220525-300	GR Eletrolytic 22uF/25V M (R)5x11 P:2.5 TAPIN()	C25,26	2
034-330625-300	GS Eletrolytic 330uF/25V M (R)1013 P:5 ()	C11,100	2
034-470415-300	Electrolytic cap. 4u7/50V M (R)0511 P:2.0 ()	C7	1
031-100184-100A	SMD Cap. 0u01/250V K 0805 X7R	C104,119	2
031-100244-100A	SMD Ceramic Cap. 0u01/50V K 0805 X7R (C27,28)	C27,28	2
031-100344-100A	SMD Cap. 0u1/50V K 0805 X7R	C115,135,138C,10,69,112	6
031-100384-100A	SMD Cap. 0u1/250V K 1206 X7R (C5,6)	C5,6	2
031-220344-300A	SMD Cap. 220pF/50V K 0805 NPO (C40)	C40	1
031-470144-101A	SMD Cap. 0u0047/50V K 0805 X7R (C1G1)	C1G1	1
033-330444-270	NPE cap. 印ELYTONE 3u3/50V K10 (R)8x13 SBE	C114,137	2
033-680464-270	NPE cap. 印ELYTONE 6u8/100V K10 (R)1020 GNE	C113,136	2
034-150895-201	Electrolytic cap. 105℃ 15000uF/63V M (R)3557 P:10mm	C1,4	2
032-100484-200	GS END mylar cap. 1uF/250V K P:15 (C37,39,30)	C37,39,30	3
Semiconductors			
051-000600-100	Transistor NPN PN:MPSW06RLRA TO-92 (ON)(Q6)	Q6	1
051-005600-100	Transistor PNP PN:MPSW56RLRA TO-92 (ON)(Q8)	Q8	1
051-290700-100	Transistor PNP (ON) PN:MPS2907A RLRA TO-92	Q12,14,16,18	4
051-540101-000	GR Transistor PNP(FAIRCHILD PN:2N5401 TO-92 (Q3)	Q3	1
054-000100-100	GS SMD DIODE: PN:ES1D 200V 1A	D1,23,37,40,44,47	6
054-001002-100	SMD ZENER DIODE PN:BZX84C10 10V SOT-23 (D32)	D32	1
054-001501-100	SMD ZENER DIODE PN:BZX84C15 15V SOT-23 (D2,3)	D2,3	2
054-033904-100	SMD Transistor PN:MMBT3904LT1 SOT23	Q25,28,29,37,50,51	6
054-033906-100	SMD Transistor PN:MMBT3906LT1 SOT23	Q26,27,30,36	4
054-050601-100	SMD ZENER DIODE PN:BZX84C5V6 5.6V SOT-23	D30	1
054-290701-100	SMDTransistor (ON) PN:MMBT2907ALT1 SOT-23 (Q52)	Q52	1

Part Number	Description	Reference Designator	Qty
Main Amp/Supply PCB			
054-414803-100ZR	GR SMD DIODE PN:LL4148GSO8 (Vishay)()	D4-5,13,14,21,22,31,33,38,41,45,48,34,6,90,91,	16
054-540100-100	SMD Transistor (PNP) PN:MMBT5401 LT1 SOT-23 (Q1)	Q1	1
054-555100-100	SMD Transistor (NPN) PN:MMBT5551 LT1 (ON)(Q2)	Q2	1
051-002301-000	MOSFET N CHANNEL PN:FB23N20D	Q11,13,15,17	4
052-400080-000	Bridge Rectifier PN:RS804 400V,8A (BR1)	BR1	1
053-257400-100	IC:DIP,Regulator PN:LM2574 HVN-15V 8PIN (NS)(U6)	U6	1
Miscellaneous			
044-100100-000	SMD FERRITE BEAD PN:321611 600R/100MHz 1206	FB1,FB2	2
025-010300-000	Thermister TSE-103 K L:50mm	TH1	1
025-210100-000	Thermister (PTC) PN:PTMS2101RP516B (TH2)	TH2	1
043-300101-000	INDUCTOR PN:YT-10033 30uH (L9,10)	L9,10	2
043-560200-000	INDUCTOR 56uH YT-10779 (L12)	L12	1
043-700100-000	INDUCTOR 70uHx2 YT-10024 (L8)	L8	1
043-820300-000	INDUCTOR 820uH YT-10034 (L1)	L1	1
072-040008-110	8P Terminal base JS-1001-08 (P1)	P1	1
072-040039-000	Terminal (PCB TYPE) PC205 (t=0.8m/m) T205MA		1
072-040064-000	Terminal (PCB TYPE) PC250(t=0.8),T250MA	T2,TER6	2
072-040096-000	Terminal T187MA(PCB TYPE) (t=0.8mm) PC187(0.8)	TER5,7	2
073-111003-000	Shorting Strap 54.9x13.6x1mm (J7)	J7	1
073-111004-000	Shorting Strap 29.5x12.4x0.8m/m (J4,9)	J4,9	2
074-300018-000	RELAY PN:943-1C-48D (RLY1)	RLY1	1
061-700044-000	Mica 13x18mm TO-220 (Q13,17)	for Q13,17	2
061-700090-900	Ceramic washer 16x21mm t=2mm 化 白色	for Q11,15	2
063-010010-000	Bracket for Transistor P/N:TRK-2	for Q11,13,15,17,TH1	5
Drive board			
Resistors			
024-000098-120	GS SMD resistor 0R 1/8W J 0805	R313,314,318,320	4
024-100298-120	SMD resistor 10R 1/8W J 0805	R89,90,140,150	4
024-100498-120	SMD resistor 1K 1/8W J 0805	R81,85,96,97,131,137,142,147,162,179	10
024-100598-120	GS SMD resistor 10K 1/8W J 0805	R75,82,83,92,98,132,133,148,163,164,181,156	12
024-100798-120	GS SMD resistor 1M 1/8W J 0805	R32,33	2
024-110598-120	SMD resistor 11K 1/8W J 0805	R74,99	2
024-200598-120	GS SMD resistor 20K 1/8W J 0805	R95,141	2
024-220398-120	GS SMD resistor 220R 1/8W J 0805	R136,167	2
024-220498-121	SMD resistor 2K2 1/8W J 0805 (R134)	R134	1
024-220598-120	SMD resistor 22K 1/8W J 0805 (R37)	R37	1
024-220798-120	GS SMD resistor 2M2 1/8W J 0805 (R87,93)	R87,93	2
024-270498-120	GS SMD resistor 2K7 1/8W J 0805 (R80,84,157)	R80,84,157	3
024-390498-120	GS SMD resistor 3K9 1/8W J 0805 (R130,161)	R130,161	2
024-390598-120	GS SMD resistor 39K 1/8W J 0805 (R86,94)	R86,94	2
024-470398-120	GS SMD resistor 470R 1/8W J 0805 (R91)	R91	1
024-470498-120	GS SMD resistor 4K7 1/8W J 0805	R151-153,183,34,36	6
024-470598-120	GS SMD resistor 47K 1/8W J 0805 (R35)	R35	1
024-560598-120	GS SMD resistor 56K 1/8W J 0805 (R38)	R38	1
024-680498-120	GS SMD resistor 6K8 1/8W J 0805 (R135,166)	R135,166	2
Capacitors			
031-100244-100A	SMD ceramic cap. 0u01/50V K 0805 X7R	C31,140, 108,118,1	4
031-100343-100A	SMD cap. 100pF/50V J 0805 NPO (C81,84)	C81,84	2
031-100344-100A	SMD cap. 0u1/50V K 0805 X7R (85C75-78,82,)	C85,75-78,82	6
031-180314-100A	SMD cap. 0u18/16V K 0805 X7R (C80,83)	C80,83	2
031-470244-102A	SMD cap. 0u047/50V K 0805 X7R (,124C93,94,101)	C124,93,94,101	4
031-560243-100A	SMD cap. 56pF/50V J 0805 NPO (5,125C92,102,10)	C5,125,92,102,10	4
031-560343-101A	SMD cap. 560pF/50V J 1206 X7R (C79)	C79	1
034-100625-303	Electrolytic cap. 100uF/25V M (R) P:2.5 (C117)	C117	1
034-100715-202	Electrolytic cap. 85℃ 1000uF/16V M (R)1017 P:5	C109,132	2
034-330615-301	electrolytic cap. 330uF/16V M (R)0812 P:3.5 散装 (C32)	C32	1

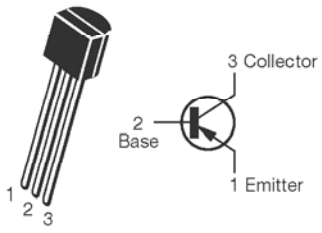
Part Number	Description	Reference Designator	Qty
Drive board			
Semiconductors			
054-000100-100	GS SMD DIODE: PN:ES1D 200V 1A (D35,43)	D35,43	2
054-001002-100	SMD ZENER DIODE PN:BZX84C10 10V SOT-23 (D42,49)	D42,49	2
054-005501-100	SMD ZENER DIODE PN:BZV55C3V6 (PHILIPS)(D60)	D60	1
054-007200-100L	SMD IC: PN:M072M-TE1 DMP8 (JRC) DUAL OP-AMP	U9,10	2
054-033906-100	SMD transistor PN:MMBT3906LT1 SOT23 (ON(Q34,35)	Q34,35	2
054-050601-100	SMD ZENER DIODE PN:BZX84C5V6 5.6V SOT-23 TAPIN	Z7,8	2
054-414803-100ZR	GR SMD DIODE PN:LL4148GSO8 (Vishay)	D36,39,46,52,61	5
054-540100-100	SMD transistor (PNP) PN:MMBT5401 LT1 SOT-23	Q33,40	2
054-555100-100	SMD transistor (NPN) PN:MMBT5551 LT1 (ON)(Q32)	Q32	1
051-000600-100	Transistor NPN PN:MPSW06RLRA TO-92 (ON)(Q31)	Q31	1
051-222200-100	Transistor NPN (ON SEM) PN:MPS2222ARLRA TO-92	Q20,22	2
051-555100-000	Transistor NPN 2N5551	Q21,23	2
053-211100-000	IC:DIP, IR2111 8PIN (IR) HALF-BRIDGE DRIVER	U7,8	2
Miscellaneous			
072-040229-000	HEADER Right Angle PN:211-107-000-400 7PIN(PIN2)	PIN2	1
072-040230-000	HEADER Right Angle PN:211-111-000-400 11PIN(PIN1)	PIN1	1
Pre-amp. Board			
Resistors			
024-000097-120	GS SMD resistor PN:1206J000 0R 1/4W J 1206	R302,303,297	3
024-100498-121	SMD resistor 1K 1/4W J 1206	R238,264	2
024-100598-101	SMD resistor PN:1206F103 10K 1/4W F 1206	R200B,201B,218B,219B	4
024-100598-121	SMD resistor 10K 1/4W J 1206	R202,206,207,212,222,229,235,252-254,257, 262,282,228,217,205,251	17
024-100698-101	SMD resistor 100K 1/8W F 1206	R200,201,218,219	4
024-150597-120ZS	GS SMD resistor 15K 1/4W J 1206 (R223)	R223	1
024-200598-121	SMD resistor 20K 1/4W J 1206 (R256,298)	R256,298	2
024-220298-121	SMD resistor 22R 1/4W J 1206 (R249)	R249	1
024-226598-100	SMD resistor 22K6 1/4W F 1206	R208,209,231,232	4
024-237597-100	SMD resistor 23K7 1/4W F 1206 (R281)	R281	1
024-270498-121	SMD resistor 2K7 1/4W J 1206 (R237)	R237	1
024-300398-121	SMD resistor 300R 1/4W J 1206 (R258)	R258	1
024-300598-121	SMD resistor 30K 1/4W J 1206 (R260)	R260	1
024-330498-101	SMD resistor 3K3 1/4W F 1206 (R203,215)	R203,215	2
024-330498-121	SMD resistor 3K3 1/4W J 1206 (R240,210)	R240,210	2
024-470598-120	GS SMD resistor 47K 1/8W J 0805 (R280,283)	R280,283	2
024-470698-121	SMD resistor 470K 1/4W J 1206 (R259)	R259	1
024-470798-120	SMD resistor 4M7 1/8W J 0805 (R244)	R244	1
024-470798-121	SMD resistor 4M7 1/4W J 1206 (R243)	R243	1
024-510398-121	SMD resistor 510R 1/4W J 1206 (R261)	R261	1
024-560598-121	SMD resistor 56K 1/4W J 1206 (R224)	R224	1
024-620398-121	SMD resistor 620R 1/4W J 1206 (R221,226)	R221,226	2
024-680498-121	SMD resistor 6K8 1/4W J 1206 (R247)	R247	1
024-680598-121	SMD resistor 68K 1/4W J 1206 (R250)	R250	1
024-820598-121	SMD resistor 82K 1/4W J 1206 (R263)	R263	1
021-330498-100	MF resistor 3K3 1/8W F (R204)	R204	1
021-820598-100	MOF ressitor 82K 1/8W F (R214)	R214	1
026-500495-252	GS VR 5KA PN:RK163111R52B-5KA (EJ) LEVEL	R216	1
026-500595-267	GS VR 50KBx4 PN:RD1631411001D-50KBx4 (EJ) XOVER	R233	1
Capacitors			
031-100244-101A	SMD cap. 0u01/50V K 1206 X7R	C12,13,224,280	4
031-100344-102A	SMD cap. 0u1/50V K 1206 X7R	C227,229,220,232-235	7
031-100344-104A	SMD cap. 100pF/50V K NPO 1206	C222,204	2
031-220344-106A	SMD cap. 220pF/50V K X7R 1206	C215,216,200,210	4
031-330445-100A	SMD cap. 3300pF/50V M 1206 X7R	C281	1

Part Number	Description	Reference Designator	Qty
Pre-amp. Board			
031-470444-101A	SMD cap. 4700pF/50V K X7R 1206	C2G1	1
031-680444-100A	SMD cap. 6800pF/50V K X7R 1206	C212	1
033-200645-300	GR NP cap. 200u/50V M (R)1321 P:5	C300,301	2
034-100515-300G	electrolytic cap. 10uF/16V M (R)0511 P:2	C220	1
034-100615-301	Electrolytic cap. 100uF/16V M (R)0611 P:5	C221	1
034-220516-301	Electrolytic cap. 22uF/16V M (R)0511 P:2	C223,225	2
034-220525-300	GR Electrolytic cap. 22uF/25V M (R)5x11 P:2.5 TAPIN	C14,15	2
035-220243-100	PE cap. FE-M 0u022/63V J P:5m/m	C202	1
035-330293-300	PE cap. PN:ESK063S33JT 0u033/63V J P:5	C209,218	2
035-330354-301	PE cap. FE-M 0u33/63V K P:5m/m	C207,208	2
035-680253-300	PE cap. FE-M PN:ESK063S68JT 0u068/63V J P:5mm	C201,213	2
035-680353-300	GS ESK cap. 0u68/63V J P:5 PN:ESK063P68JA(C214)	C214	1
Semiconductors			
054-007200-100L	SMD IC: PN:M072M-TE1 DMP8 (JRC) DUAL OP-AMP	U200-205	6
054-011400-100	SMD Transistor PN:DTC114TKA SMT3)	Q202	1
054-033904-100	SMD Transistor PN:MMBT3904LT1 SOT23	Q203,204	2
054-414803-100ZR	GR SMD DIODE PN:LL4148GSO8 (Vishay)	D200-205,207,209,212,216,217,218	12
Miscellaneous			
072-010058-000ZR	GR RCA JACK 2P PN:0502000W1G (Red,White)(J201)	J201	1
072-040008-110	8P Terminal base JS-1001-08 (P2)	P2	1
072-040169-000	CONNECTOR 2 PIN JS-1001-2 P:2.5mm	CONN4-Pin3,4	1
072-060219-000	BINDING POST (gold plated) PN:A807A-RB 8PIN	J200	1
074-030002-000	TOGGLE SW PN:L101-T2B4QE LFE/PHASE	SW201,202	2
077-100104-100	GR conjunction base PN:JS-1001-04 P=2.5 4P	CONN5,CONN5B	2
Fuse PCB			
093-205205-300	FUSE:VBS UTE FUSE:5A,250V,5*20mm	F1	1
073-050001-000	FUSE CLIP P/N:CFFH1206 (F1,B1)	F1,B1	2
039-220384-100	GR X2 Safety Capacitor 0u22/250V x16.5x8.5	CXAC1	1
043-324300-000	INDUCTOR 324uH YT-10778 (L13)	L13	1
072-040064-000	Terminal (PCB TYPE) PC250(t=0.8),T250MA (TER2)	TER2	1
072-040096-000	Terminal T187MA(PCB TYPE) (t=0.8mm) PC187(0.8)	TER1,3,4	3
Miscellaneous/Mechanical parts			
042-010139-000	Power Transformer PN:YT-13438 CSW-10 120V/60Hz	PT1	1
063-252623-900	Front Panel (L8400P 120V) 10"x10"x0.0984" SPCC black		1
073-014084-500	Bracket 6.64"x3.5"x3.2" SPCC		1
074-020018-000	ROCKER SW (POWER) PN:RF1003-BB4-0	SW4	1
086-021836-000	Power Cord SPT-2 #18 12 ft. +T187膠套	CORD 01	1
062-252506-000	Bucket 10"x10"x4.89" HIPS UL94 V0 黑	Plastic air-tight cover	1

Integrated Circuit/Transistor Diagrams

MPSW56, 2N2709A, 2N5401

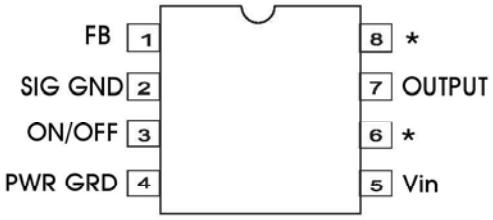
Q3,8,12,14,16,18,52



LM2574

0.5A Buck Regulator

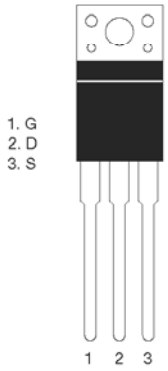
U6



* No internal connection, but should be soldered to PC board for best heat transfer.

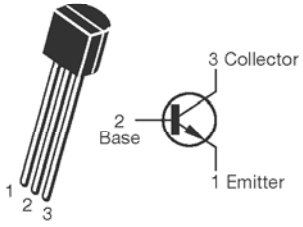
MOSFET IRFB23N20D

Q11,13,15,17



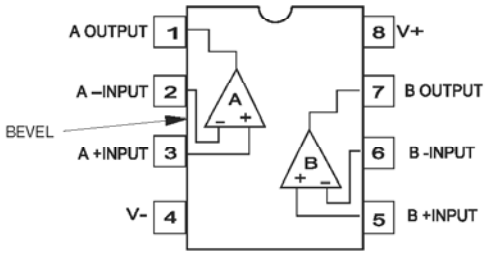
MPS2N222
MPSW06, 2N5551

Q6, 20-23,31



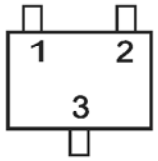
OPAMP, DUAL
TL072CDR SO-8,

U9,10,200-205



* MMBT3904LTI SOT23,
* MMBT3906LTI SOT23,
DTC114TK SMT3,
* MMBT5401 LTI,
* MMBT5551 LTI

Q1,2,25-30, 32, 33-37,40,50, 51,40,202-204

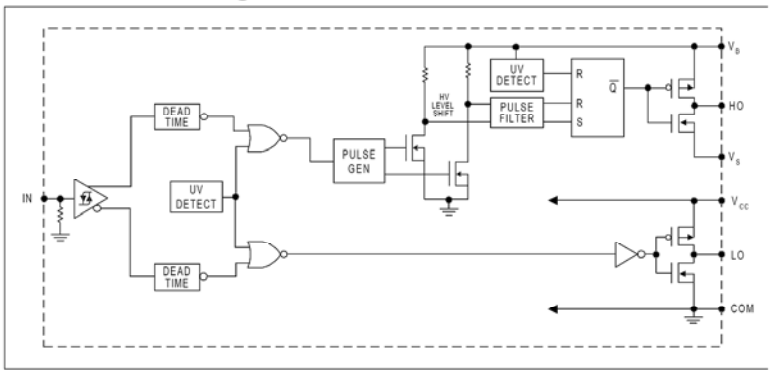


1) Emitter
2) Base
3) Collector

* PREFIX MAY BE "FMMT"

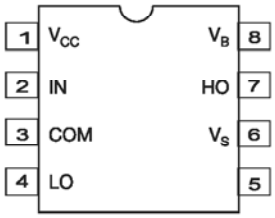
IR2111

Functional Block Diagram

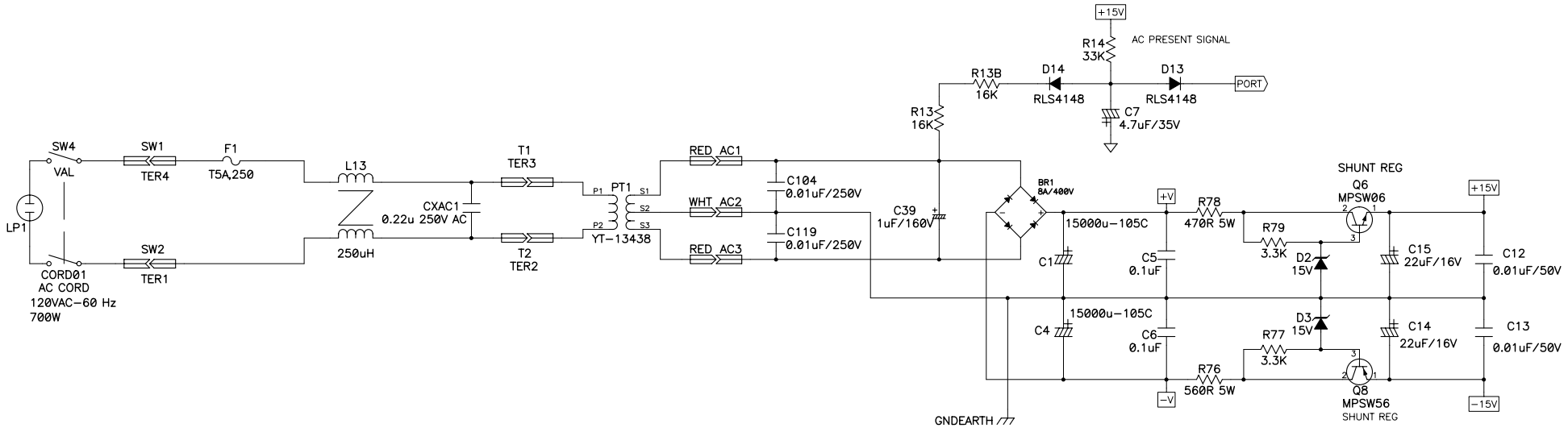


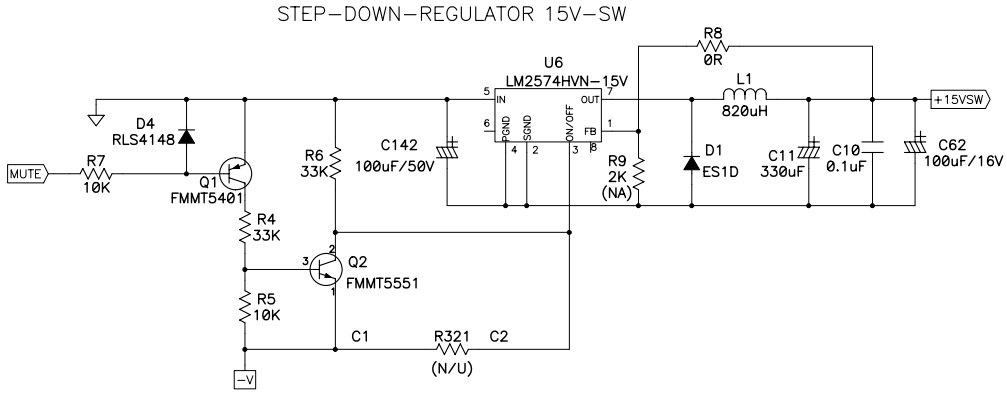
IR2111 HALF-BRIDGE DRIVER

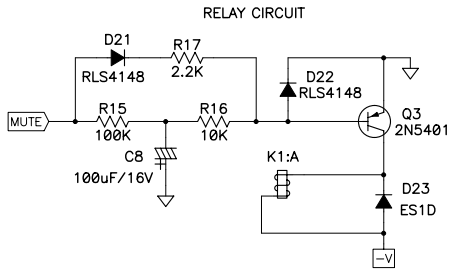
U7,8



L8400P L series

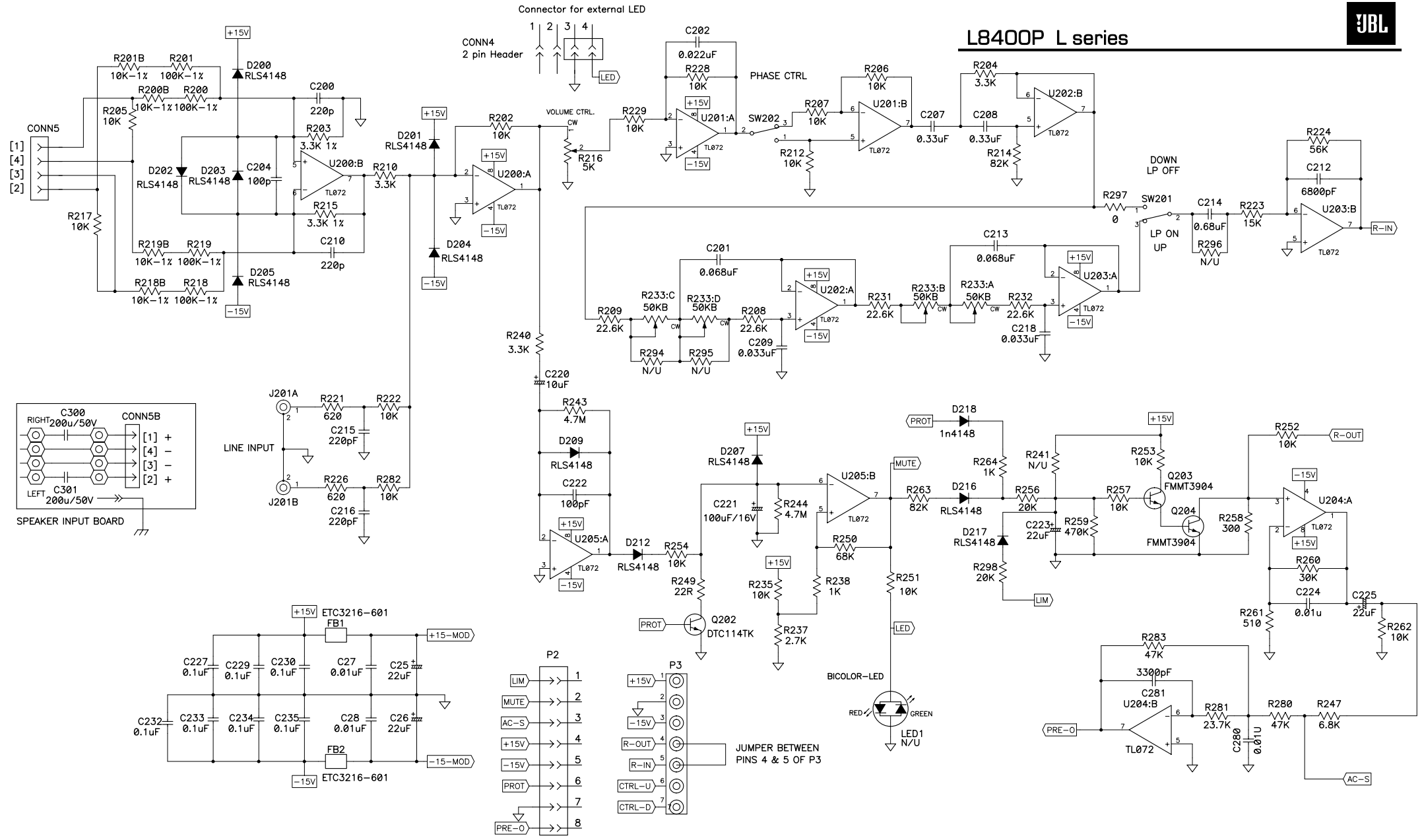






Rev:	Notes:	Date:	Rev:	Notes:	Draw by	Designed by	Checked by	Approved By	Harman Consumer Group
00		09/16/04							: 353590-002
01		12/09/04							Model no: Studio L8400P
									Sch name: L8400P-120V-120904.sch
									Issue no:
									Date: 12/09/2004
									Sheet: 1 OF 4 Rev: 01
									Size: A2 Author: AMM

L8400P L series



Rev:	Notes:	Date:	Rev:	Notes:	Draw by	Designed by	Checked by	Approved By	Harman Consumer Group
00		09/16/04							: 353590-002
01		12/09/04							Model no: Studio L8400P
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									Issue no:
									Date: 12/09/2004
									Sheet: 2 OF 4 Rev: 01
									Size: A2 Author: AMM

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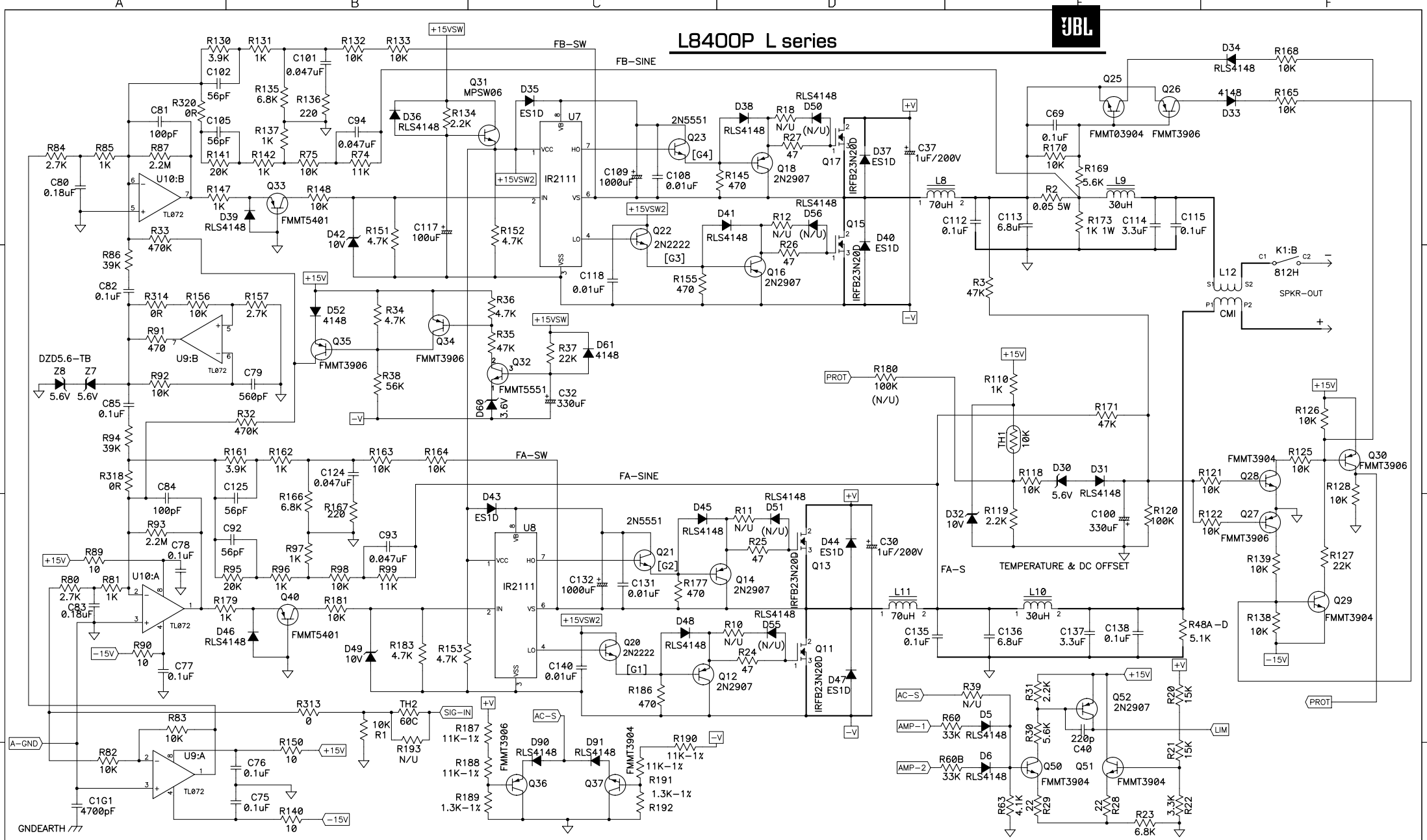

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00		09/16/04							: 353590-002
01		12/09/04							Model no: Studio L8400P
									Sch name: L8400P-120V-120904.sch
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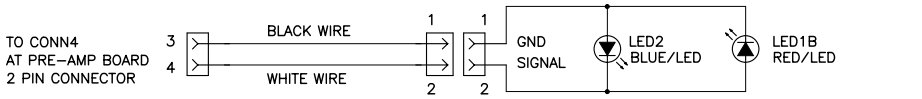
									Date: 12/09/2004
									Sheet: 3 OF 4 Rev: 01
									Size: A2 Author: AMM



CYLINDRICAL DIFFUSED LED'S
LED2 BLUE LED REF. P/N LT5B2-83-UAC2
LED1 RED LED REF. P/N LT5C12-83-UC9T

Rev:	Notes:	Date:	Rev:	Notes:	Draw by	Designed by	Checked by	Approved By
00		09/16/04						
01		12/09/04						

	Harman Consumer Group
:	353590-002
Model no:	Studio L8400P
Sch name:	L8400P-120V-120904.sch
Issue no:	
Date:	12/09/2004
Sheet:	4 OF 4 Rev: 01
Size:	A2 Author: AMM